

FIG.1

DESCRIPTION OF 4-BIT  
GRAY CODE

DECIMAL CODE	BINARY CODE ADR<3~0>				GRAY CODE GADR<3~0>			
	<3>	<2>	<1>	<0>	<3>	<2>	<1>	<0>
0	0	0	0	0	0	0	0	0
1	0	0	0	1	0	0	0	1
2	0	0	1	0	0	0	1	1
3	0	0	1	1	0	0	1	0
4	0	1	0	0	0	1	1	0
5	0	1	0	1	0	1	1	1
6	0	1	1	0	0	1	0	1
7	0	1	1	1	0	1	0	0
8	1	0	0	0	1	1	0	0
9	1	0	0	1	1	1	0	1
10	1	0	1	0	1	1	1	1
11	1	0	1	1	1	1	1	0
12	1	1	0	0	1	0	1	0
13	1	1	0	1	1	0	1	1
14	1	1	1	0	1	0	0	1
15	1	1	1	1	1	0	0	0

• CARRY

DOWNWARD  
DIRECTION

UPWARD  
DIRECTION

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FIG.2

EXPRESSION CONVERTING 4-BIT GRAY CODE INTO 4-BIT BINARY CODE

BINARY CODE ADR<3~0>		GRAY CODE GADR<3~0>	
ADR<3>	=	GADR<3>	
ADR<2>	=	Exor(GADR<3>,GADR<2>)	
ADR<1>	=	Exor(GADR<3>~GADR<1>)	
ADR<0>	=	Exor(GADR<3>~GADR<0>)	

FIG.3

EXPRESSION CONVERTING N-BIT GRAY CODE INTO N-BIT BINARY CODE

BINARY CODE ADR<n-1~0>		GRAY CODE GADR<n-1~0>	
ADR<n-1>	=	GADR<n-1>	
ADR<n-2>	=	Exor(GADR<n-1>,GADR<n-2>)	
ADR<n-3>	=	Exor(GADR<n-1>~GADR<n-3>)	
⋮	⋮	⋮	
ADR<0>	=	Exor(GADR<n-1>~GADR<0>)	

FIG.4

EXEMPLARY LOCATION OF CARRY OF 4-BIT GRAY CODE

DECIMAL CODE	BINARY CODE	GRAY CODE	
5	0 1 0 1	0 1 1 1	
6	0 1 ① ②	0 1 0 1	
7	0 1 1 1	0 1 0 0	

DOWNWARD

UPWARD

FIG. 5

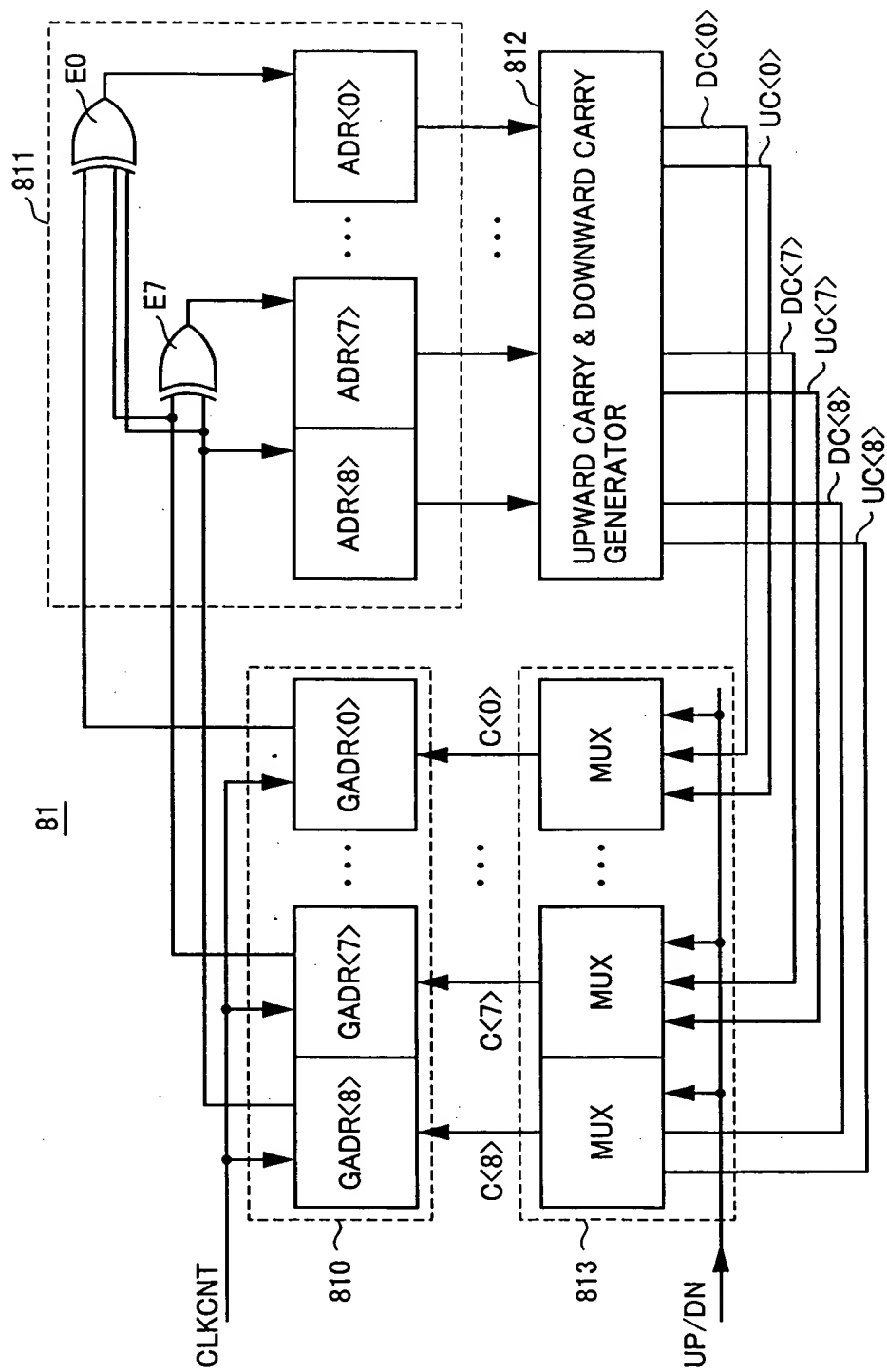


FIG.6

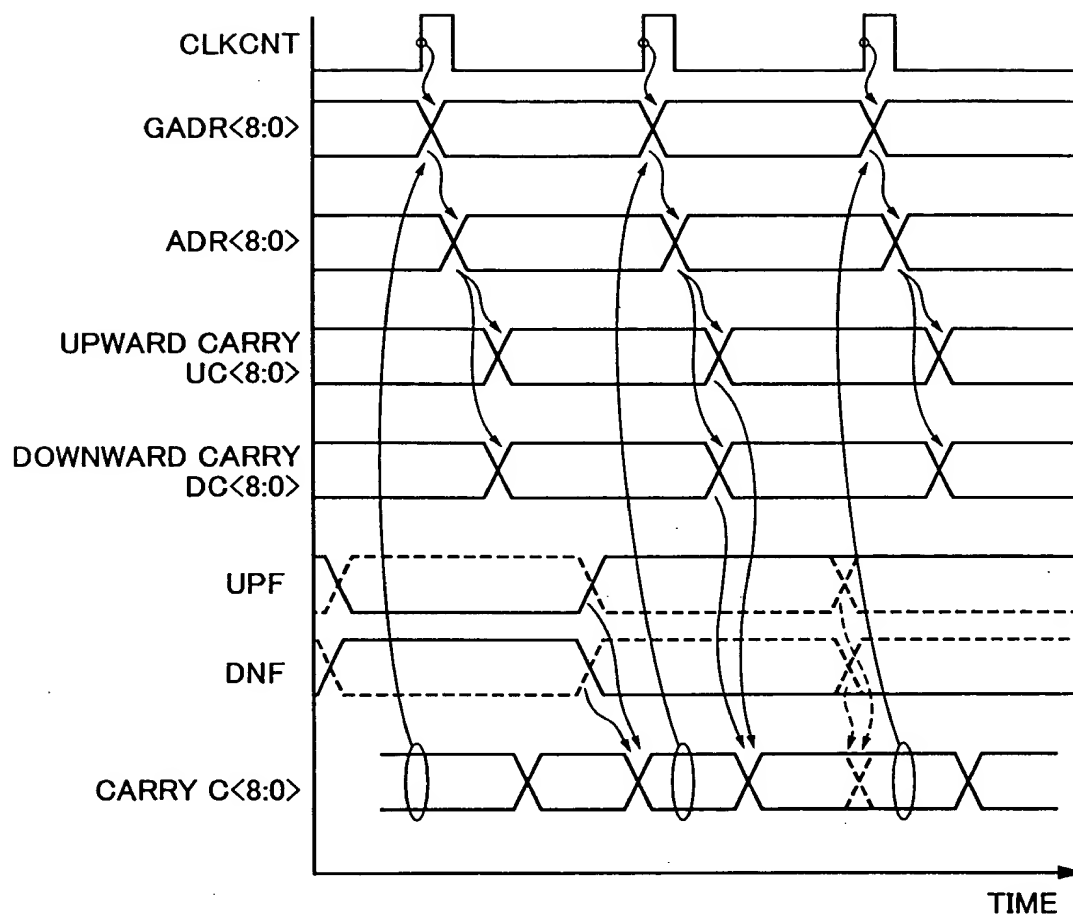
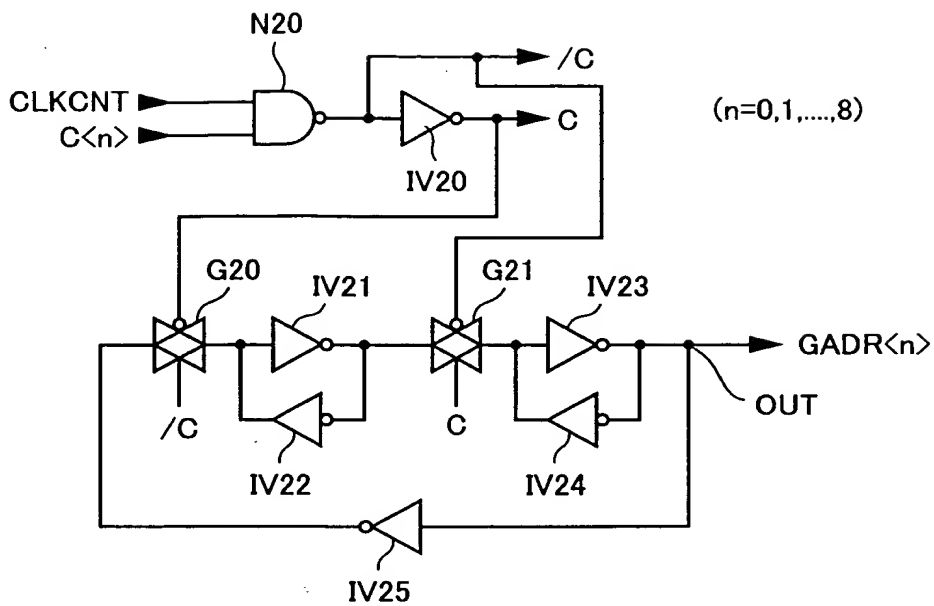


FIG.7



**FIG.8**

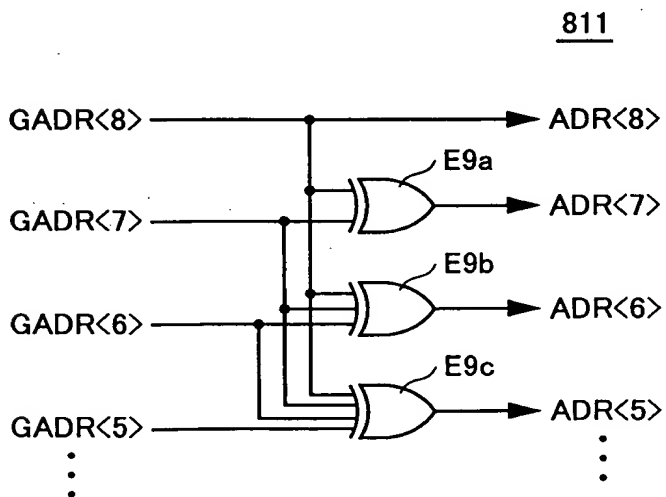


FIG.9

1000

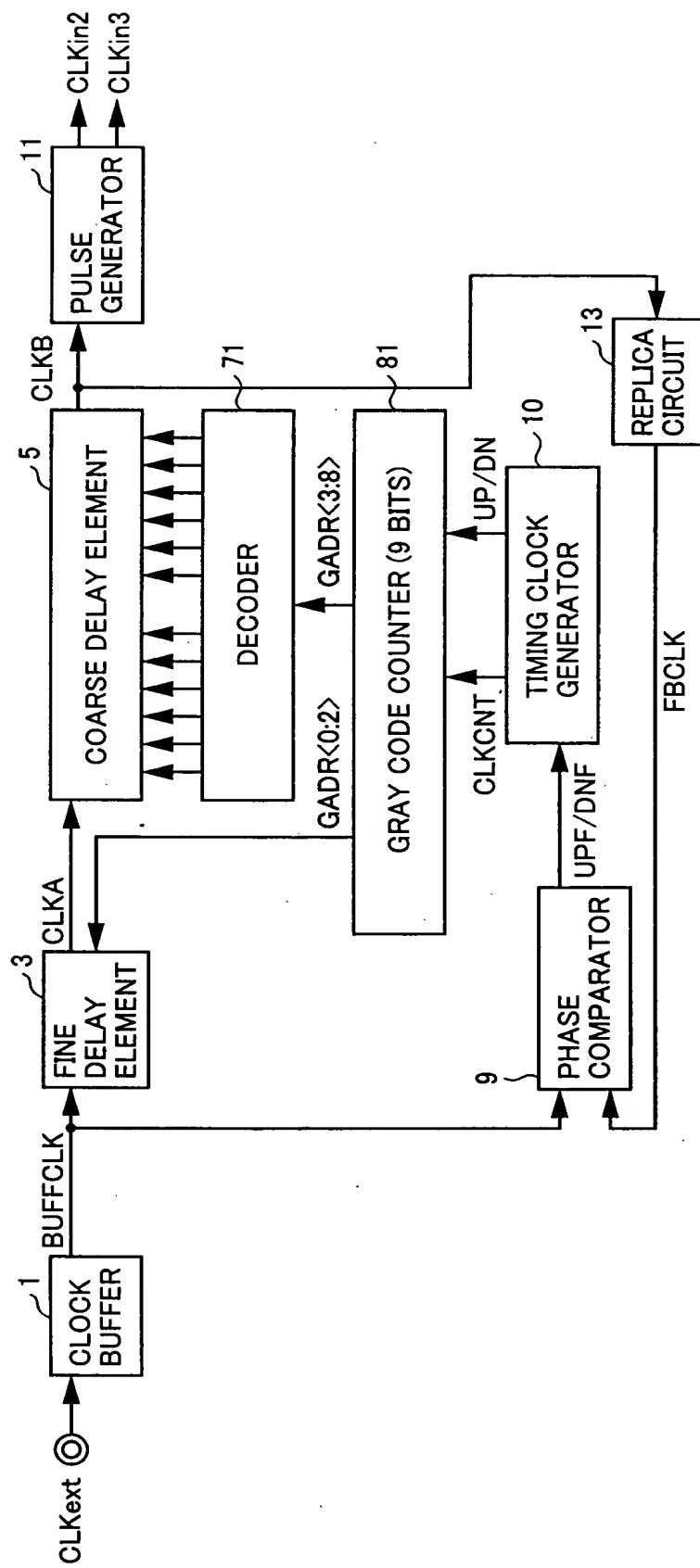


FIG.10

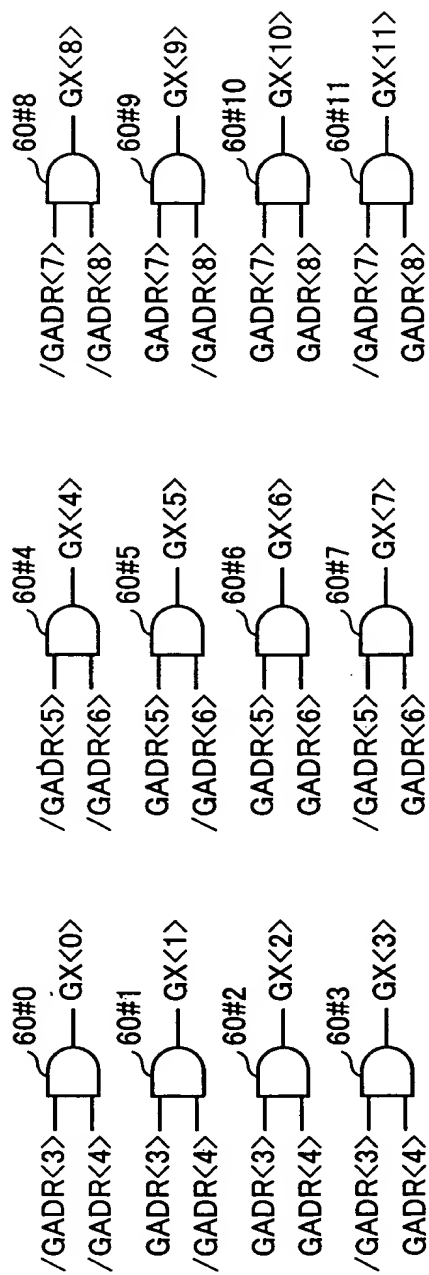
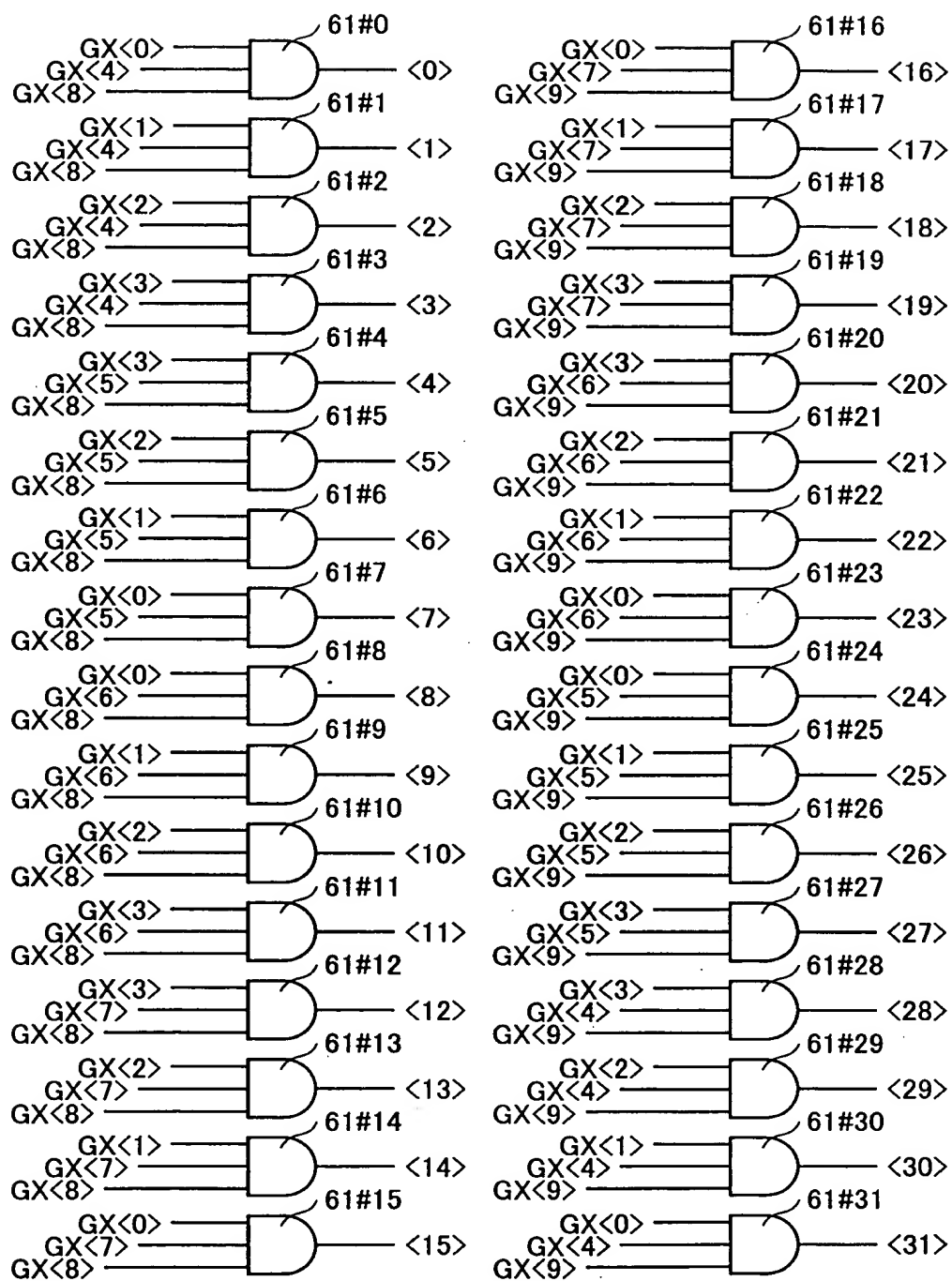


FIG.11



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FIG.12

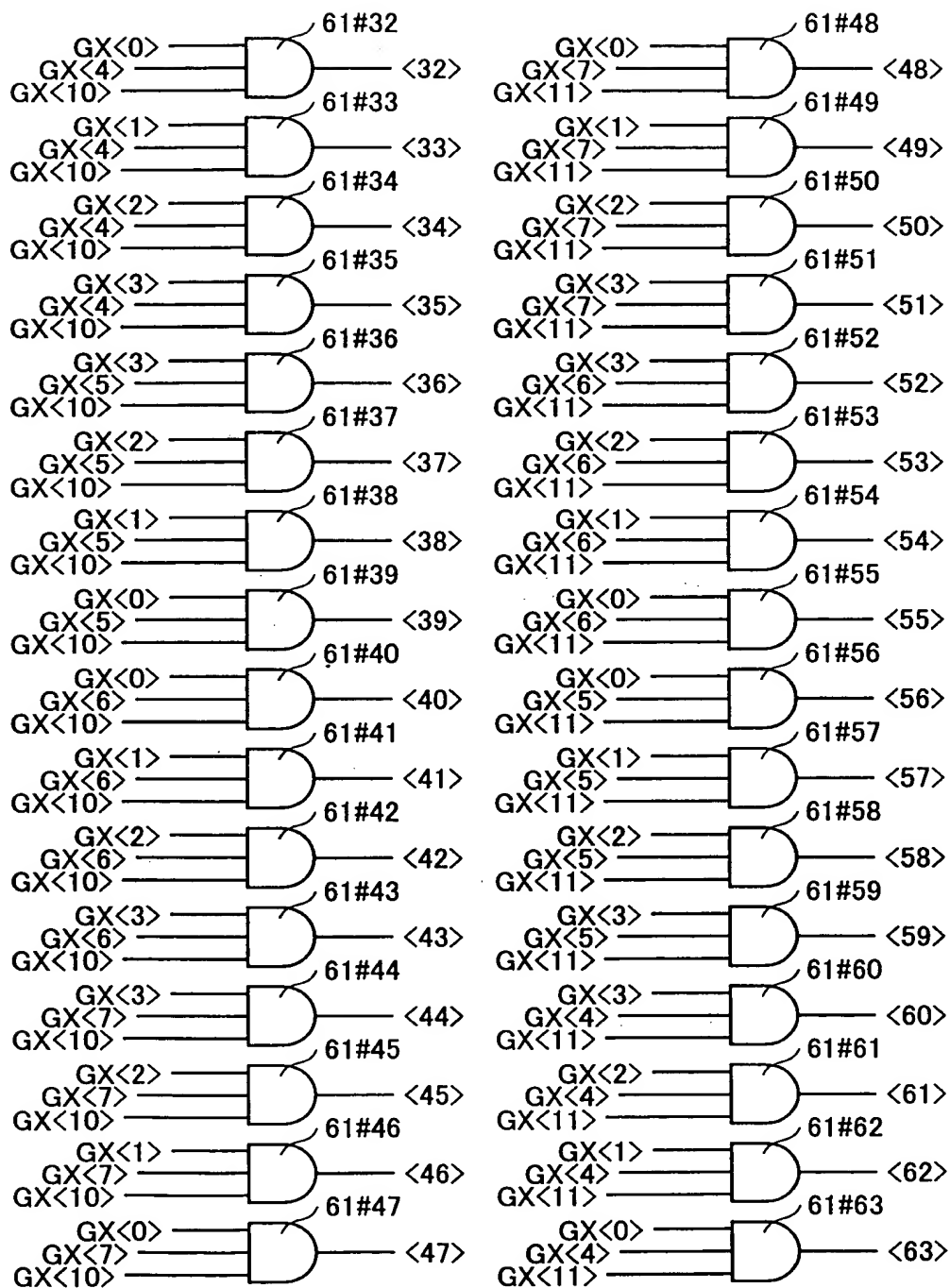


FIG. 13

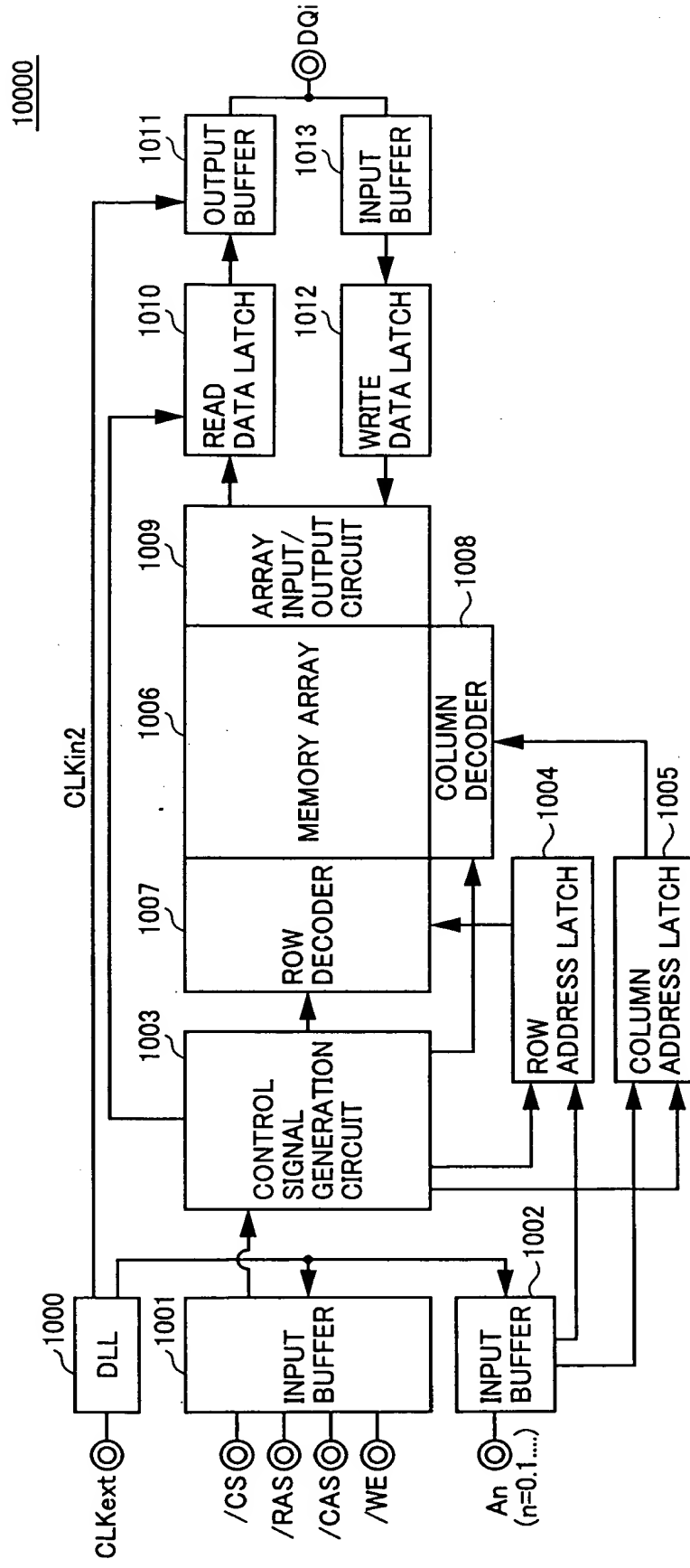


FIG. 14

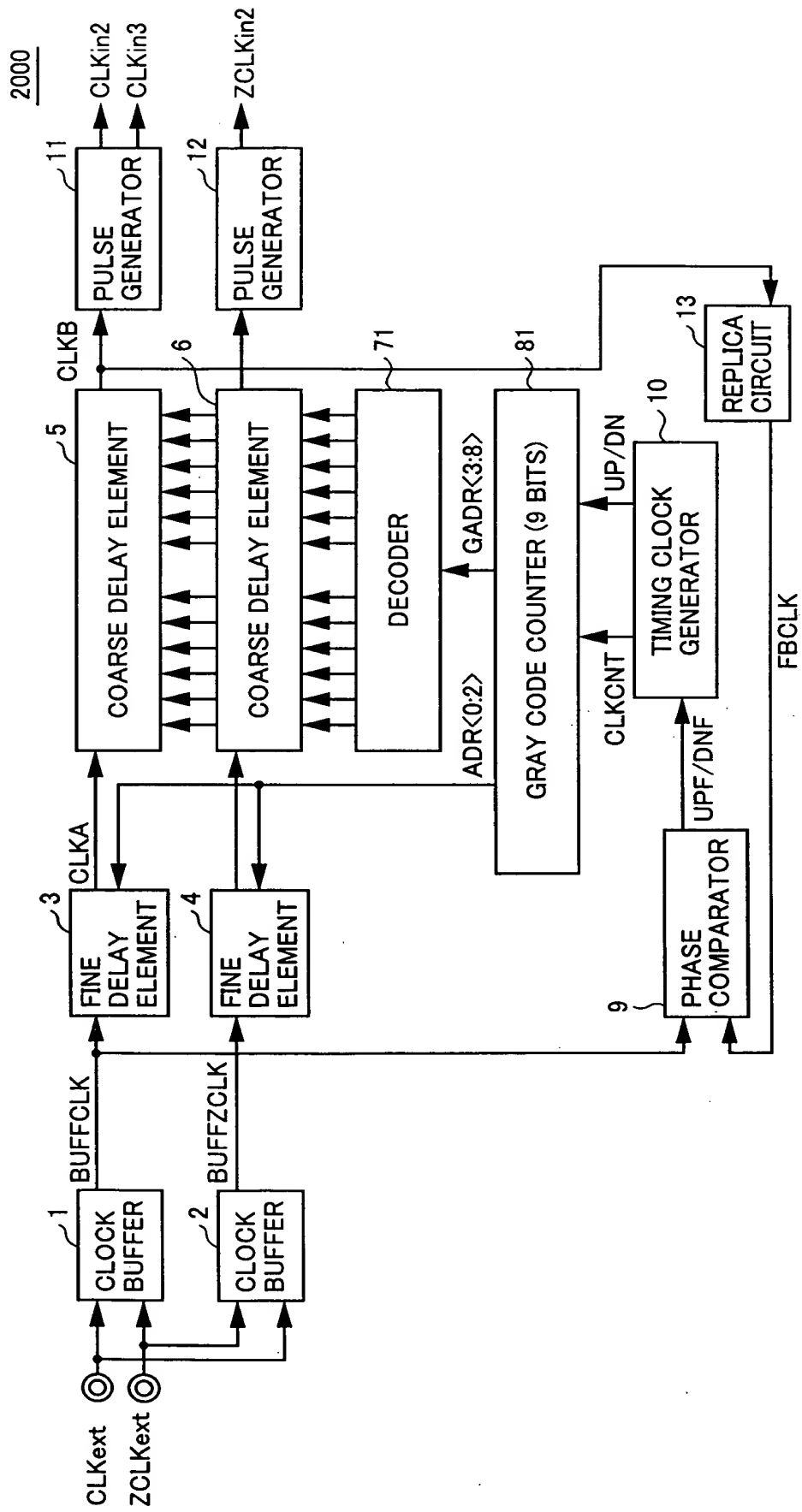


FIG.15

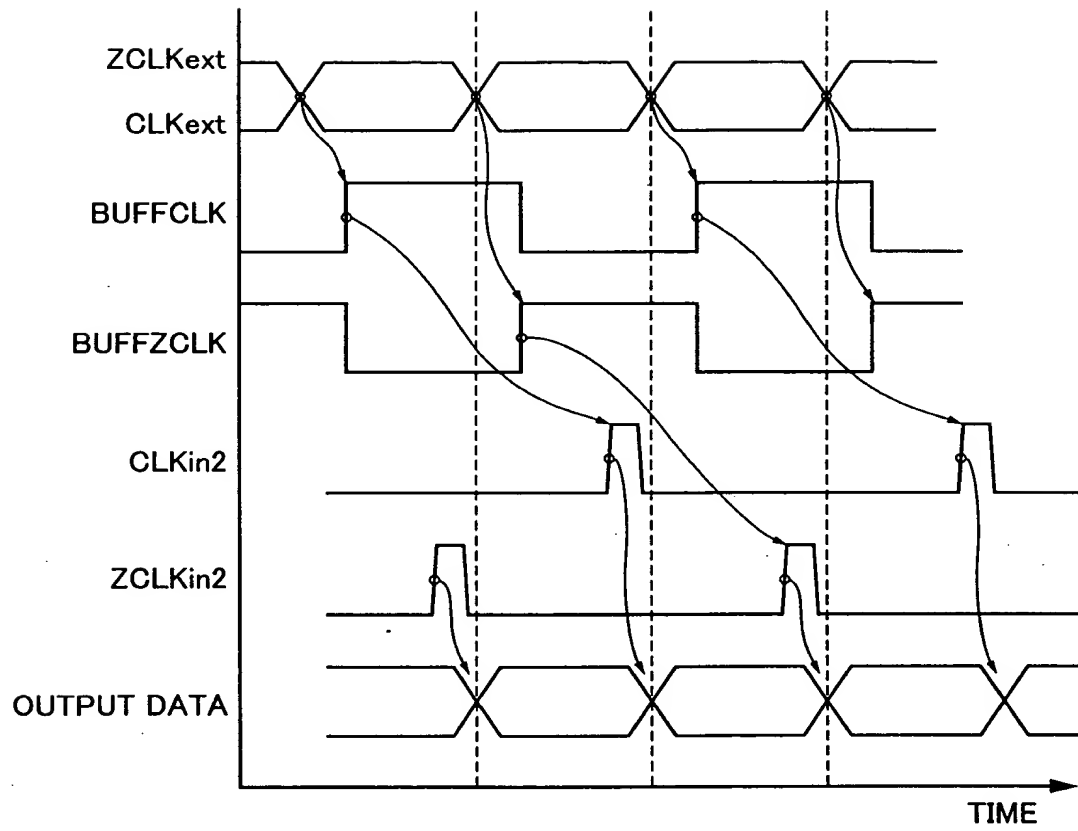


FIG. 16

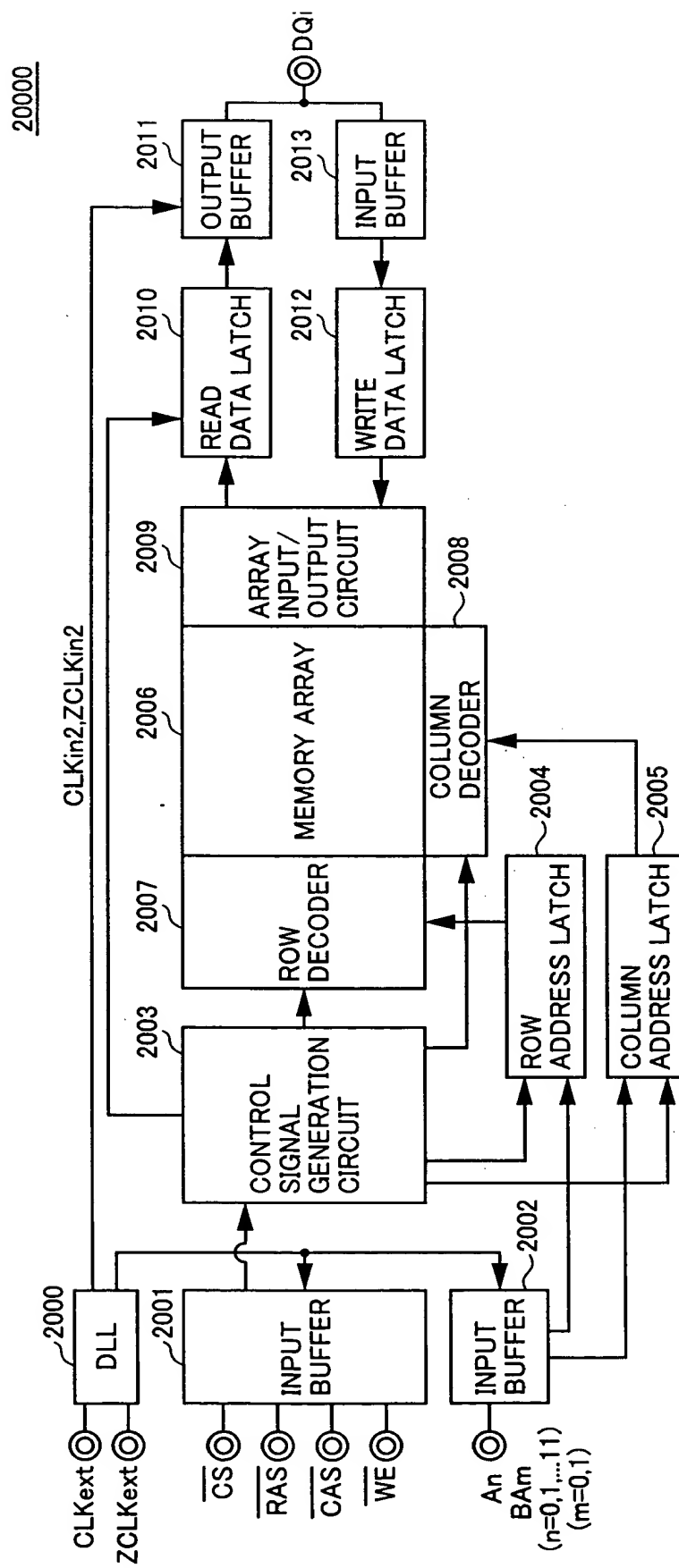


FIG.17 PRIOR ART

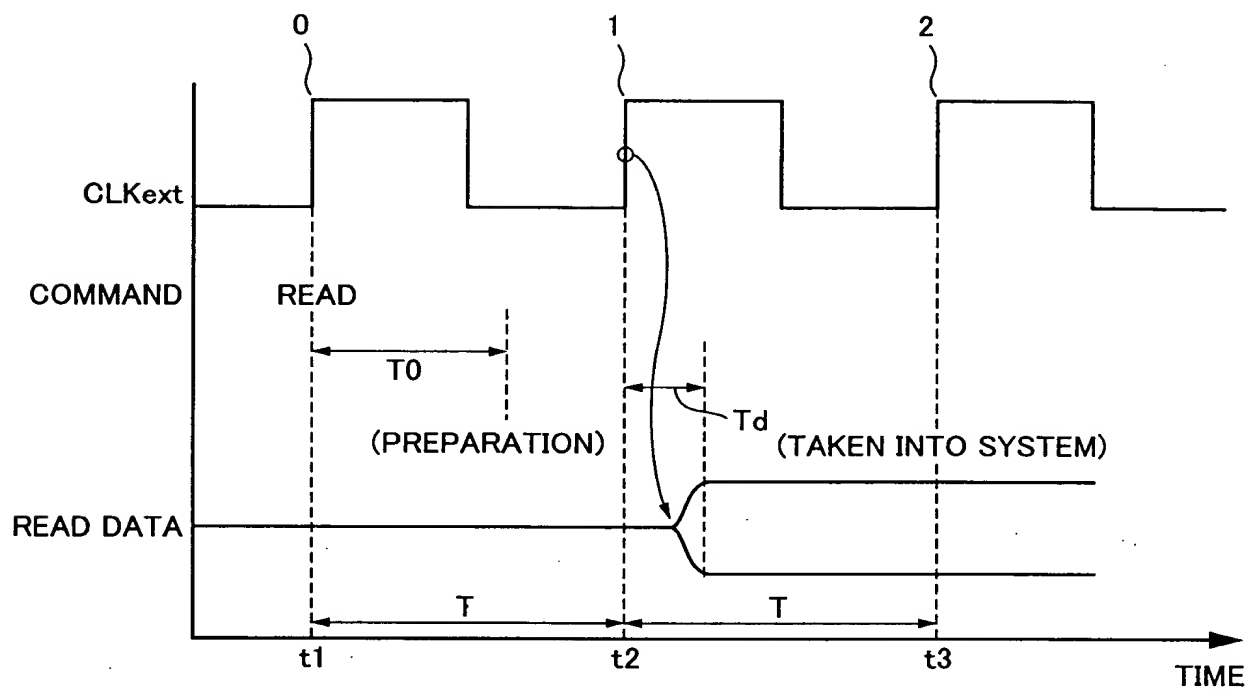


FIG.18 PRIOR ART

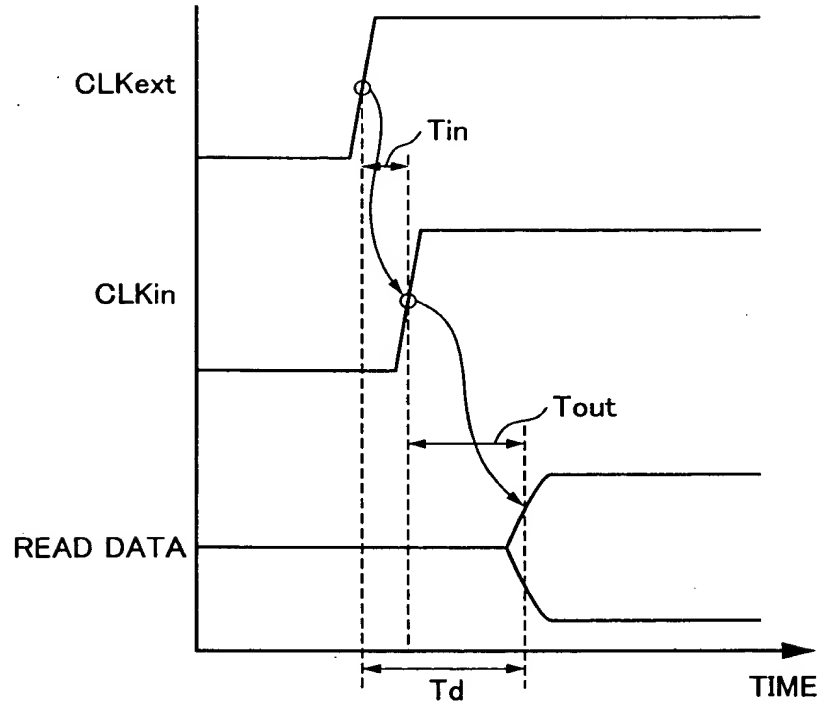


FIG.19 PRIOR ART

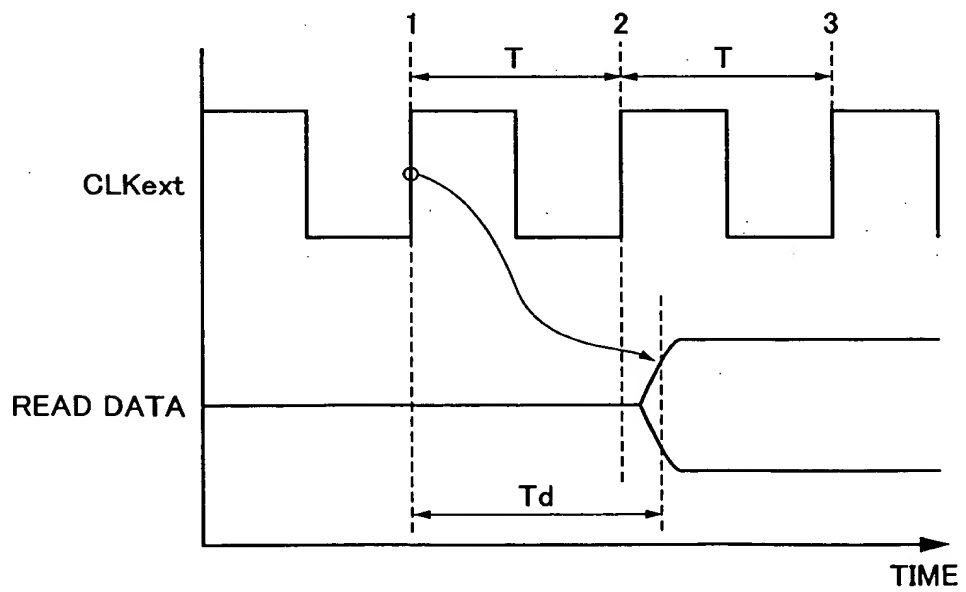


FIG.20 PRIOR ART

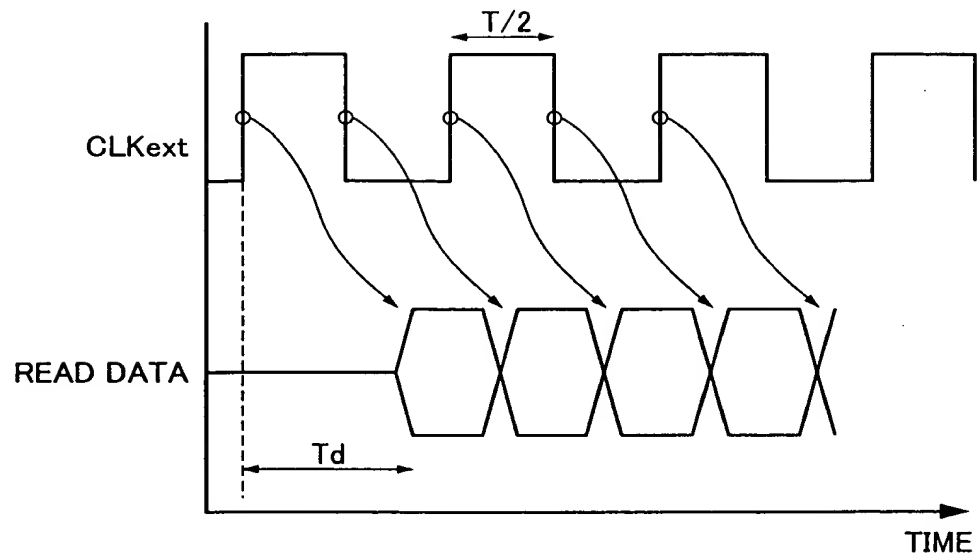
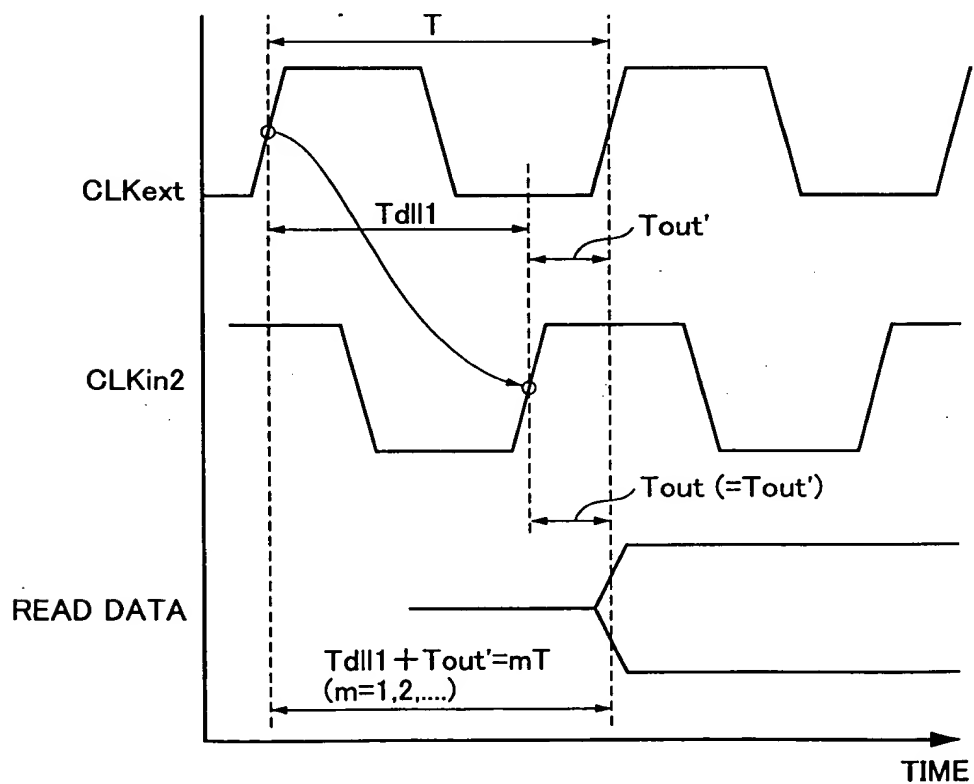


FIG.21 PRIOR ART





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FIG.22 PRIOR ART

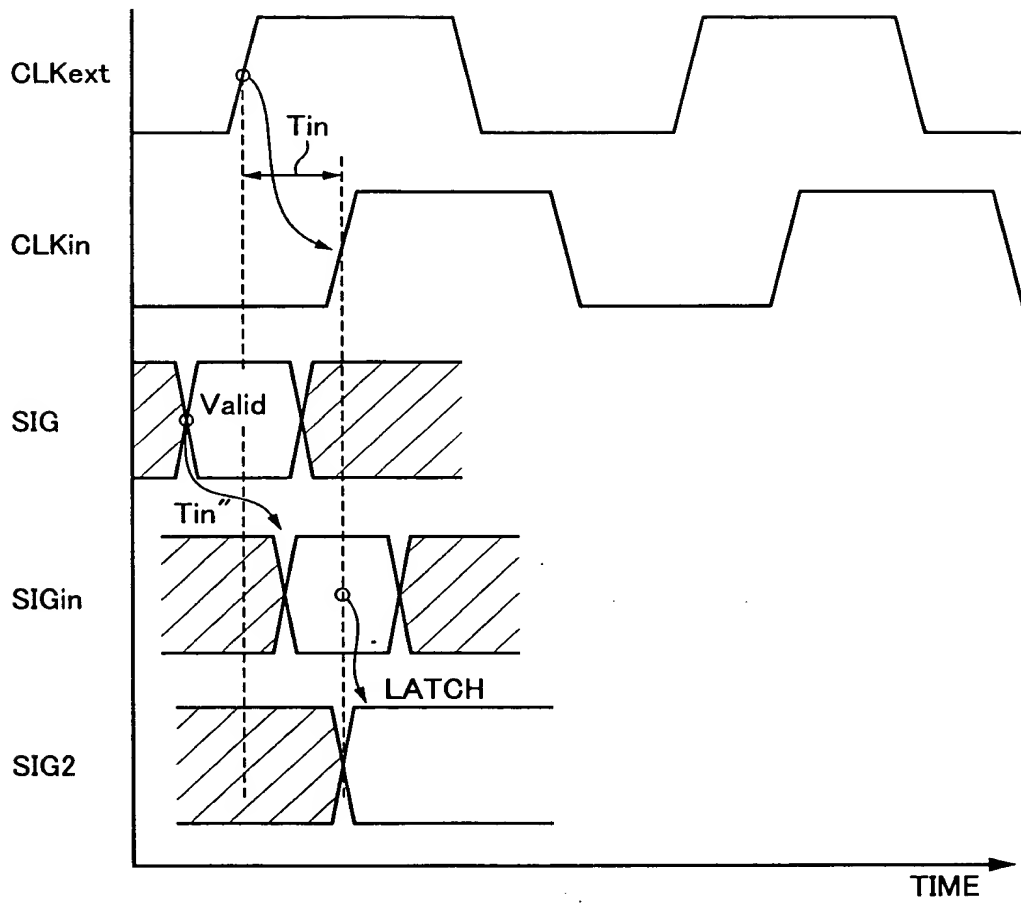


FIG.23 PRIOR ART

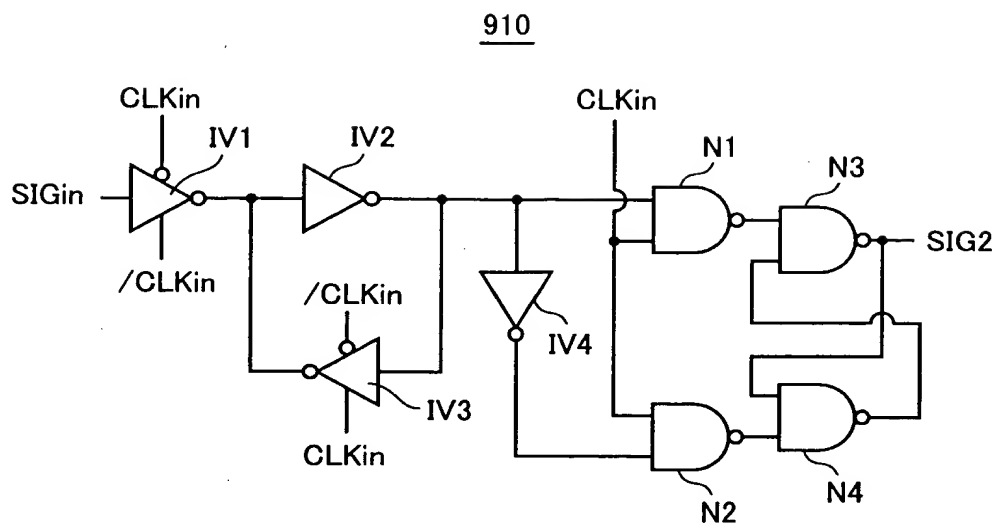


FIG.24 PRIOR ART

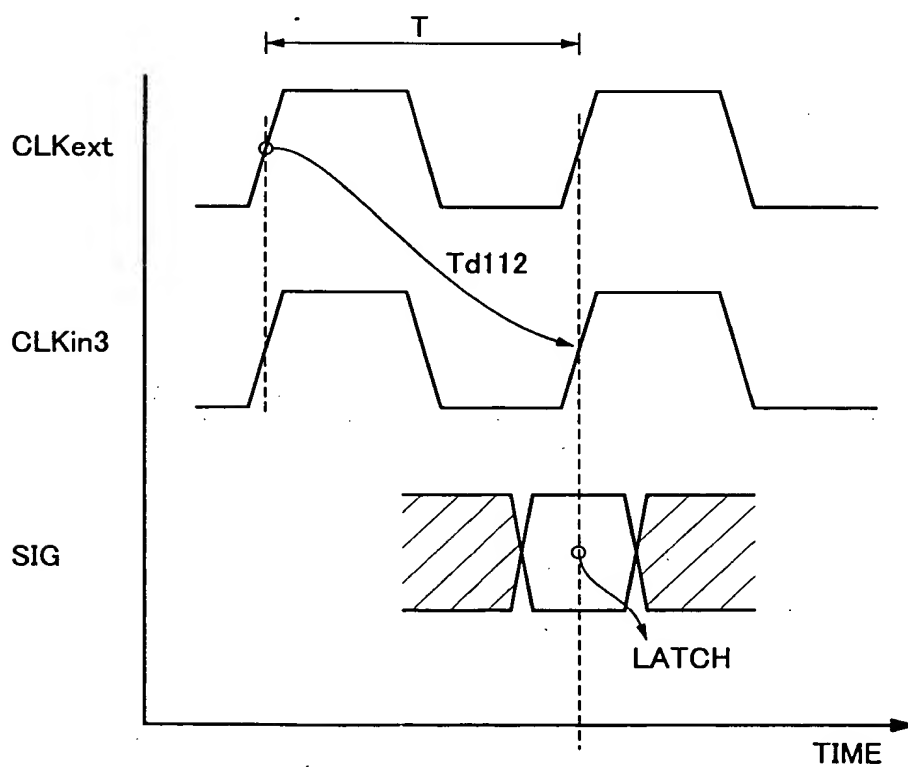


FIG.25 PRIOR ART

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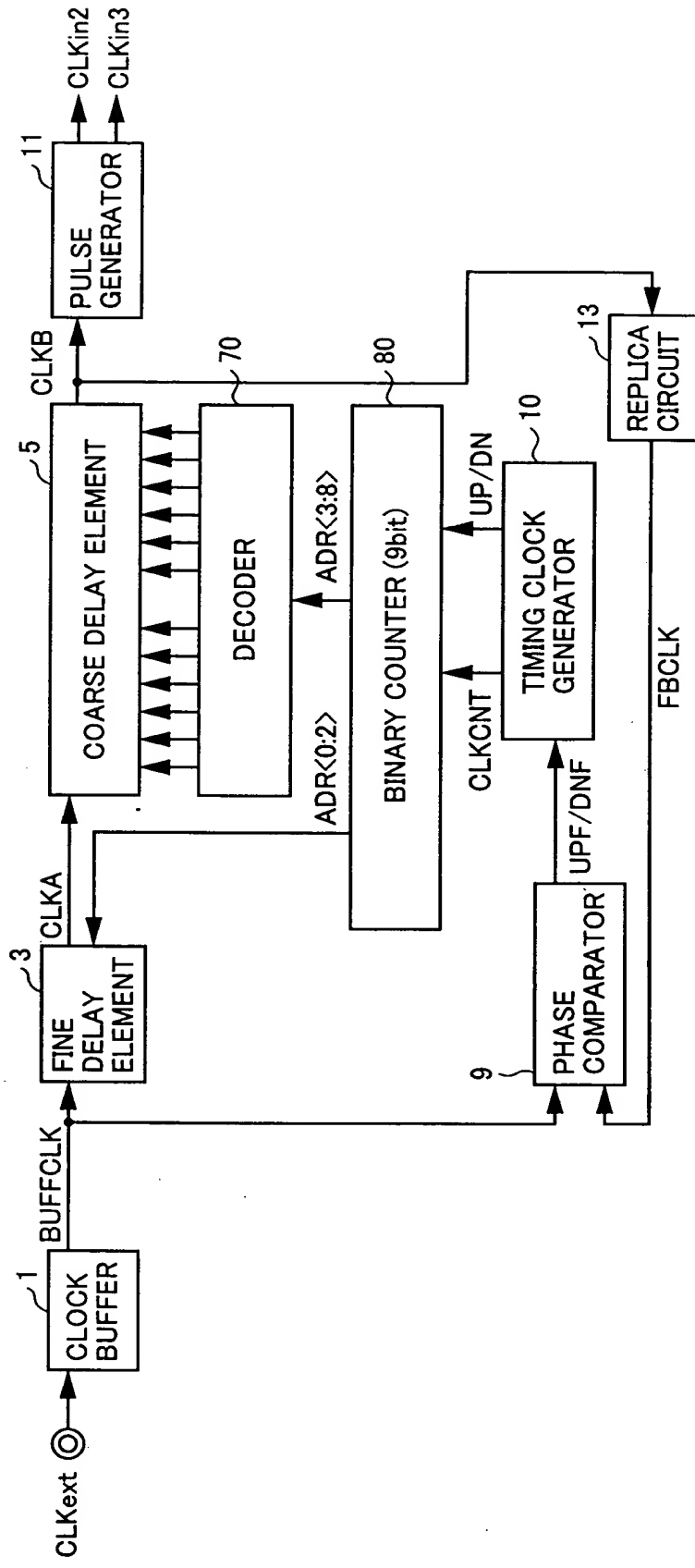


FIG.26 PRIOR ART

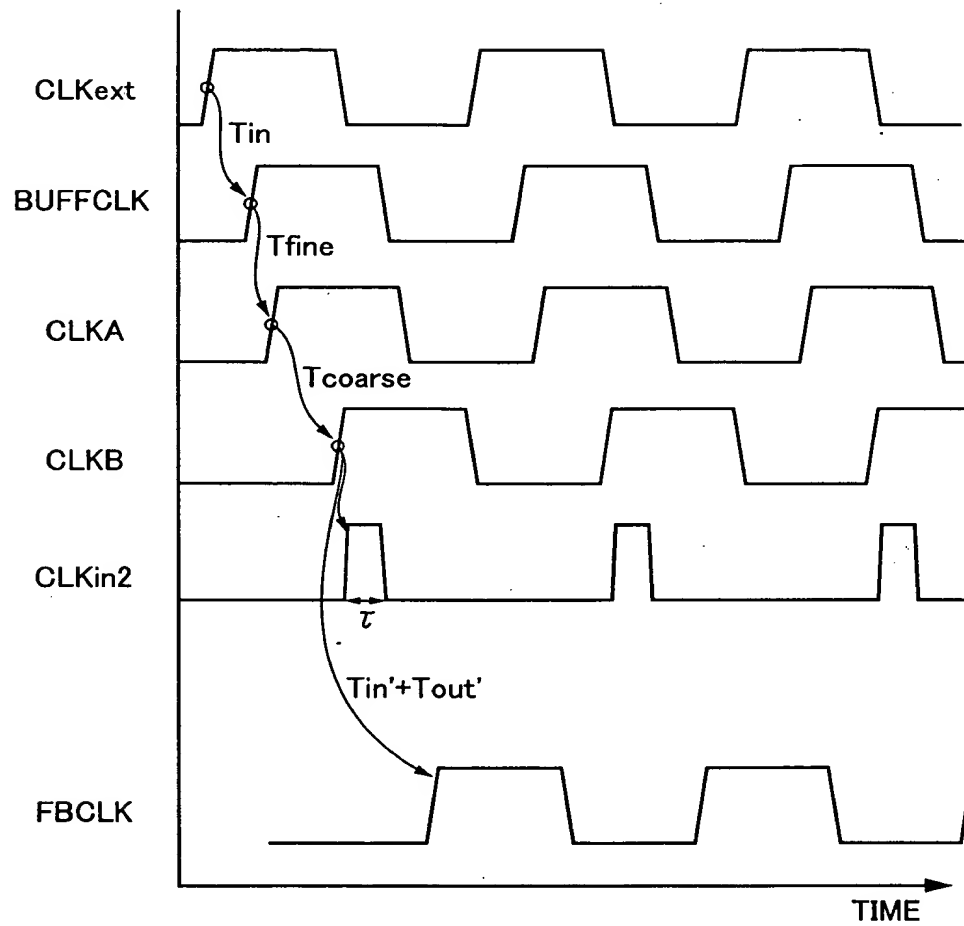


FIG.27 PRIOR ART

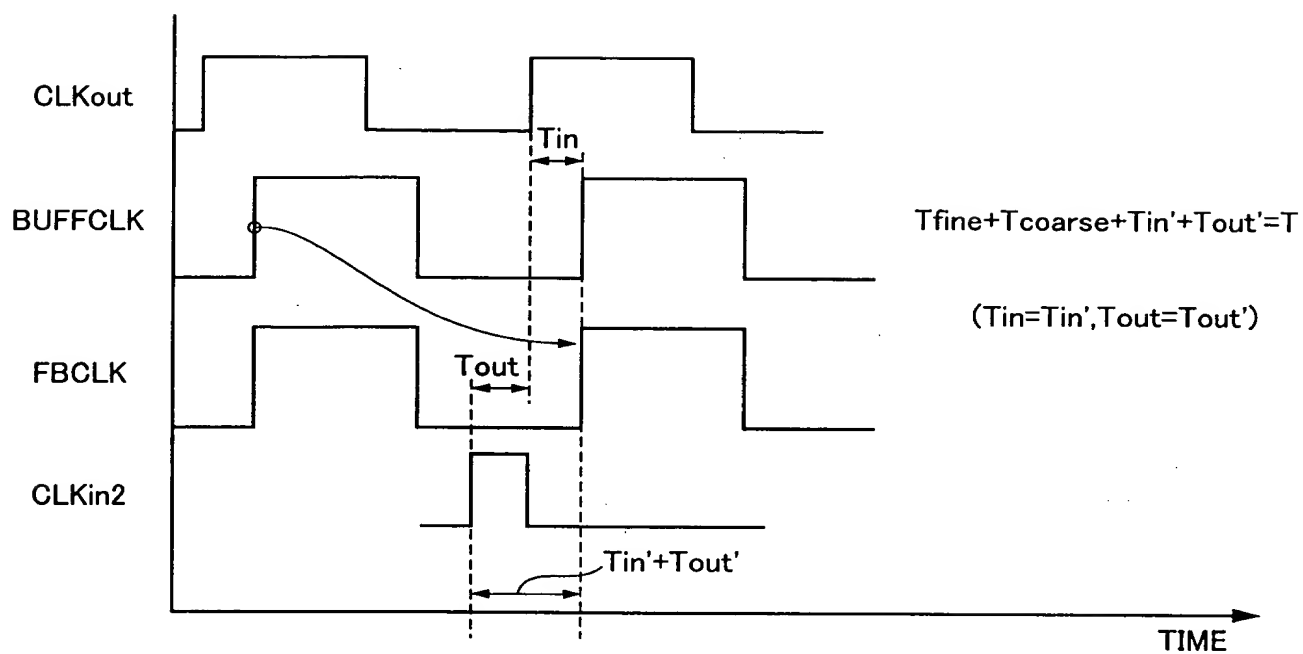


FIG.28A PRIOR ART  
UP (UPF="H",DNF="L")

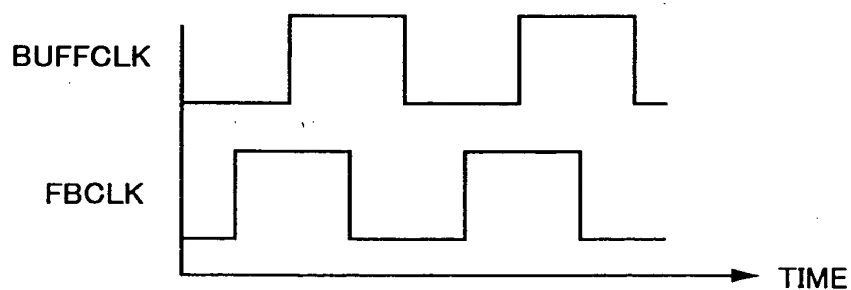


FIG.28B PRIOR ART  
DOWN (DNF="H",UPF="L")

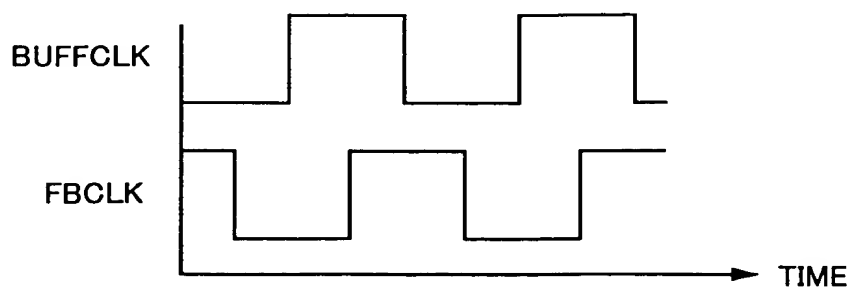
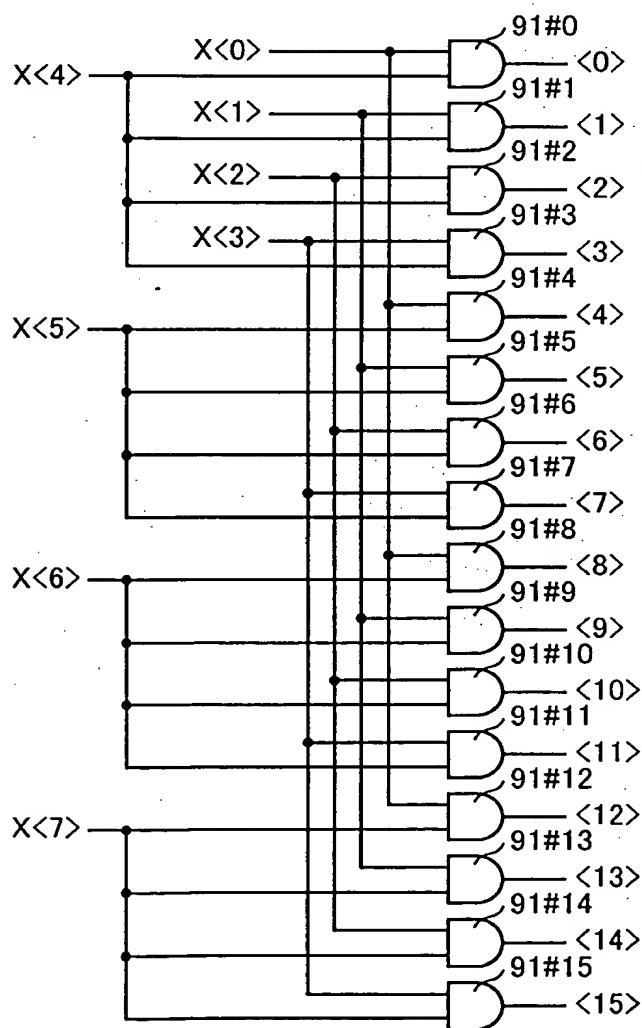


FIG.29 PRIOR ART

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FIG.30 PRIOR ART

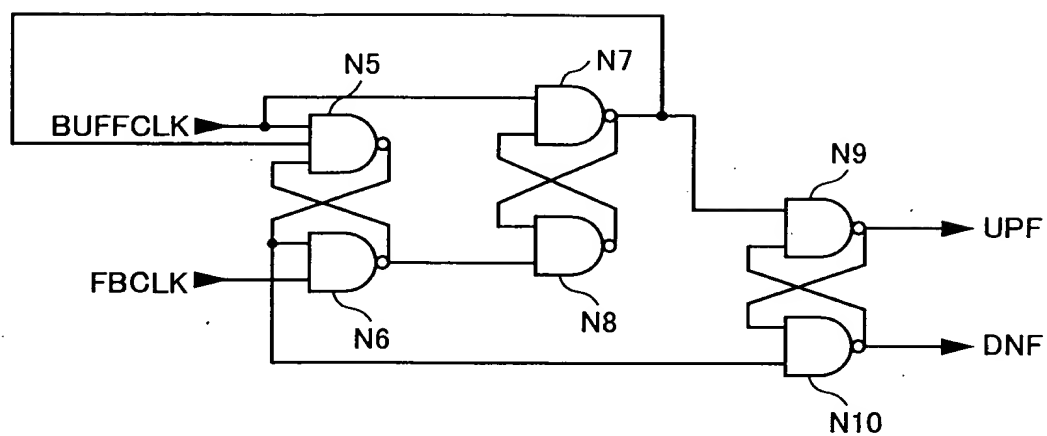


FIG.31

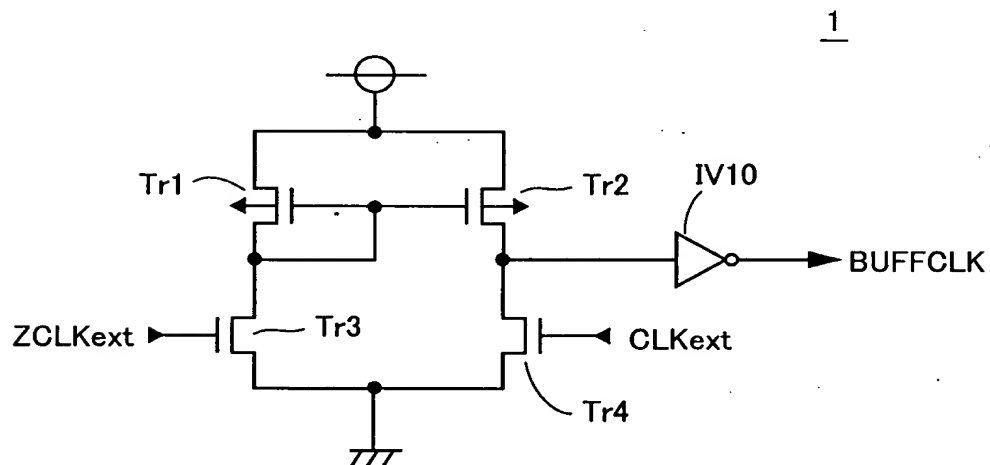


FIG.32

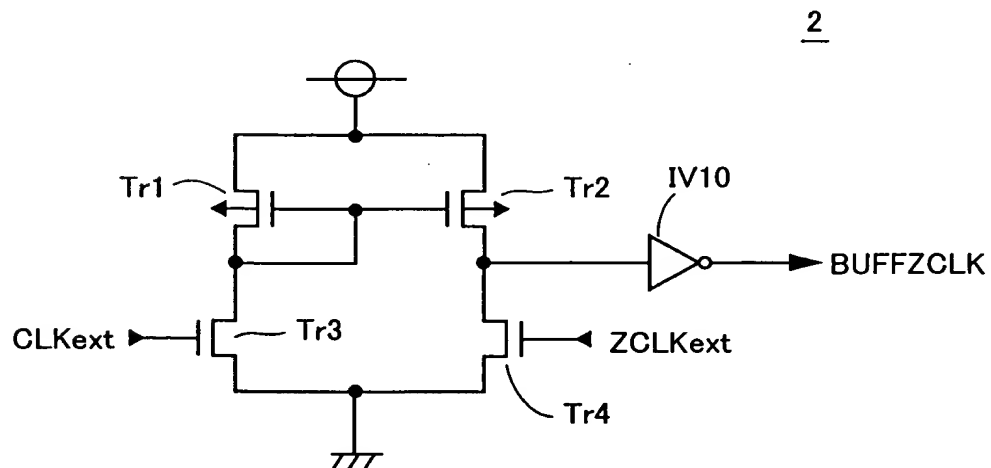
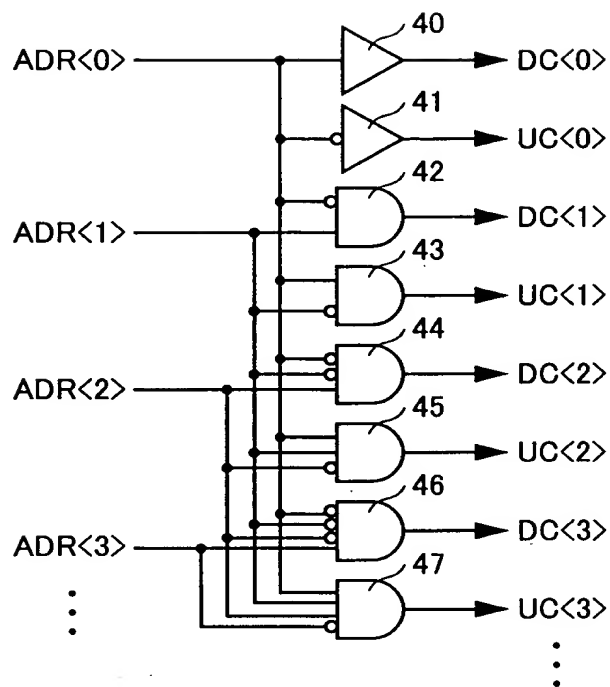


FIG.33



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FIG.34

